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rule and the possibly beneficent effects of further evolution, are extremely interesting; but for the present at least they belong largely to the realm of political theory. Not one of the four apologies, however, stands the test of analysis. The social advantages alleged to flow from corrupt practices are either illusory or minimal. On the other hand, the resultant evils are great and real, although, no doubt, they have often been exaggerated by sensational writers. Whether corruption be approached from the latter side, as is commonly done, or from the side of its apologists, the social necessity of working for its limitation is manifest.

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THE MEANING OF EXPERIENCE FOR SCIENCE AND FOR RELIGION.

FRANK GRANGER.

WHAT does Experience mean? In order to answer this question we shall not set about making a definition. Instead we shall take first a bit of experience, say the sound of a bell, and observe how this apparently simple occurrence is viewed by persons who approach it from different standpoints. Then we shall be better able to understand how experience as a whole is viewed from different standpoints.

You might consider the sound of a bell as a physicist, a physiologist or a psychologist. Perhaps you might begin by distinguishing between the hearer and the thing heard. But this distinction is not so important as might be thought at first. In fact, so far as hearing itself goes, there is no distinction. As Aristotle would say, "The faculty and the object of hearing are one in the act of sense-perception." What do we mean then when we say that we hear a sound? The nervous processes that go

on in the ear or in the brain are not a sound. The vibrations of the bell and of the air, or other external media, are not a sound. It is not correct to say that we hear the vibrations, as though the vibrations were specially apprehended by hearing; indeed we become aware of vibrations by sight and by touch. It would be equally inaccurate to say that we hear the nervous processes which accompany hearing. Whether we look at experience as psychologists or as physicists or as physiologists, we diverge somewhat from the standpoint of the pure experience.

Now let us alter our phrase, and instead of saying, "We hear a sound," we will say, "There is a sound." We thus eliminate from the experience of a sound all that does not belong to it. And what we have just done for the experience of a sound we want to do for experience generally; we want to think of it as simply as possible by eliminating the superfluous. Scientific men have long proceeded in this way. They try to make their problems easier by dealing with one aspect of things at a time. But that is just what we failed to do at first. The word "sound" in its full meaning would mingle together physics in its reference to vibrations, physiology in its reference to the functions of the nervous system, psychology if we referred the sound to the experience of a particular individual. Some people think that this last reference gives us the real meaning of things. That is not so. We shall see that even psychology cannot claim to deal with the whole of experience.

Thus there are several aspects of even so simple a thing as a sound. And science does not deal with all these at once, but divides them up and allots one duty to one branch of science, say, physics, and another duty to another, say, physiology. Here is a great difference between scientific and ordinary methods. Usually we do not interest ourselves except in so far as these divisions concern the matter in hand. For example, a witness in a court of law, in giving evidence about what he has

heard, will not mention these scientific aspects of the sounds in question.

Not only does science try to split up its problems in this way: it tries to get free from the standpoint of the individual, with his preferences and prejudices, to occupy itself exclusively with that which is common to all experiences, or at least that which is capable of entering into all experiences. There is a purpose in all this. No part of nature is of private interpretation, and by the coöperative use of knowledge it is possible to apprehend nature more fully. There are thousands of workers to-day all over the world, each trying to add something to the common stock of knowledge.

In this way it becomes more easy for the whole of our knowledge to be made one harmonious system, and thereby more easy to be grasped. The advance of science does not consist only in the apprehension of more details, but in grouping together or subordinating the details which are already known to us. In fact, this latter part of science which attempts to find out the meaning of things is perhaps more important than the other which is concerned with adding fresh facts. At an earlier stage in man's history he sought more knowledge, so that he might do his work and reach his purpose in the simplest way and with the least possible expenditure of work. And this is the way in which knowledge is viewed by most people to-day. But, for some, knowledge is become no longer a means, but an end. We seek the easiest ways of apprehending knowledge, as of old our forefathers sought the easiest ways of building or of growing corn. Science, then, tries to find the shortest way to the understanding of the whole of things just as, in practice, men seek to obtain control over the whole of the resources of nature. Hence it may be said that technical knowledge is first in the order of time. Knowledge for its own sake comes later. Science may conveniently be marked off from its synonym, knowledge, as *knowledge for its own sake*.

We have seen what science is. Let us now consider how it comes to be, that is to say, how there come to be persons who are occupied in the pursuit of science. At first there were no men of science, only men of practice. If we study the coming of this new kind of man, we shall understand a little how the ordinary experience is transformed into the experience of science.

To-day, indeed, it is true that thought of a scientific kind is going on. But it was not always so, and some day this kind of thought may cease for a time, as indeed it almost ceased from the third to the fifteenth centuries. After all, very few people occupy themselves in this way. For example, the number of men in England who are occupied in physiological research is very small at present. And the majority of men view purely disinterested thought in any subject with suspicion, which passes upon occasion into dislike. And with reason. For scientific thought is not occupied with immediate needs. As Lord Macaulay pointed out with unconscious irony, voicing the feelings of many persons, thought never mended a pair of shoes. Scientific thought would cease to be such if it did. It is not its business any more than it is the business of chemistry to do the work of the violinist.

Scientific thought goes its way without asking whether its methods will satisfy daily needs. On the other hand, practical methods are often unconcerned about science. In fact many things are done best when they are done without thinking very much about them. This is the case with most games. So also the daily task, if it be a regular one, is performed almost unconsciously. Among the great mass of workers, it is only one here and there who reflects upon the methods of his work. In the East twenty centuries may pass without changing one detail in the grinding of corn, or the weaving of silk. In the West, in the Middle Ages, it was somewhat different. The development of building and of the other arts—sculpture, stained glass, embroidery—showed that practical inven-

tion was alive. But in the absence of systematic thought the meaning of his practical methods escaped the worker.

But the thinker must have the opportunity of thinking. Enough has been said about the dangers of external interference, as if toleration were all that is required in order that there may be thinkers. This is a mistake. Leisure and the use of apparatus, including under this, instruments, books and the facilities of travel, are required for the pursuit of the several sciences. Certainly very simple apparatus has often been enough: that which was employed by a Faraday or a Fechner was made out of rough enough material. But the exact observation of minute processes or of processes involving the presence of unstable substances, cannot be carried on in a cheap way. They make demands which can only be satisfied at a considerable cost, as for example, in the study of radium. And since these sums of money do not promise any immediate return, there seems to be no place for research in the modern economic structure. The discoverer and the inventor usually spend their time, energies and money before they are in a position to gain any profit. The man devoted to scientific research may be said therefore not to be of this world. To this extent there is an interesting likeness between the prophet of science and the prophet of religion.

Again the scientific thinker must be willing not only to concentrate himself upon some special lines of investigation. He must also be ready to gain hints from all sorts of quarters. It is sometimes asked why men occupied with particular aspects of nature should stray beyond their own sphere. The answer is that we cannot say beforehand how far the sphere of a particular science may extend. Facts the most unlikely may throw light upon other facts, or, at least, furnish clues which ingenious minds may trace to their origins.

How then, you ask, can we distinguish between one kind of inquirer and another? By the special aspect of facts in which he is interested. As we have seen, physi-

ology deals with one aspect, psychology with another, chemistry with another and so on. Physiology does not confine itself to animals, but extends its survey to plants and latterly even to the functions of certain inorganic substances; everywhere, however, it is dealing with one aspect of the facts.

Now the life of Jesus and the history of the Christian Church are facts. And like other facts, they present many aspects. From one point of view they are facts in the history of man. And again, as we shall see, they have a bearing upon the meaning of nature. Thus the historian and the philosopher will have something to say about them. But because of the emotional interest of these facts, and their power over the course of human history, men are attracted to them who are not always sufficiently versed in historical and philosophic criticism. The eager journalist, like Robert Blatchford, marshals fragments of ancient controversies, and sees in them the ruins of the Christian system. Haeckel dismisses all of religion that does not fit in with a preconceived theory of nature. And Mach, from the standpoint of the physicist, fails to detect the character of the religious experience.

It would be well if religious persons took warning by the faults which they find in the critics of religion. At any rate many of the opponents of the Christian religion have been serious thinkers. But there is a region of thought in which conflict disappears, and in which the revelation of nature through science, and the revelation of man's life through the Christian experience are in their degree constituent parts of one harmonious process. It is only from so lofty a standpoint that we can hope to understand the true relation of religion and science.

Let us consider how far we may speak of science as revelation.

The several groups of scientific men—mathematicians, physicists, chemists, geologists, botanists, physiologists—are occupied in one work. They direct themselves to the several aspects of a universe of facts which is common

to all: just as they were occupied with that isolated fact, the clang of the bell. And just as they help us to understand that single fact of experience, so they help us to understand the whole of experience. And they do this, finding out ways by which we may comprehend the parts of our experience more clearly and simply.

This may seem a strange statement to those readers for whom the different sciences are so many cumbrous and uncouth systems of expression. But, in truth, the difficult phrases which scientific men employ are a kind of shorthand. They express, in brief, groups of ideas which in turn stand for many groups of facts.

To this extent the sciences do serve practical ends. By making it more easy for the individual to understand that part of experience in which he is interested, they render his control of experience more complete. Hence the advance of science is partly measured by the extent to which it is simplified. For instance, the atomic weights of the elements have been arranged by Mayer and Men-delejeff in certain proportionate groups, and the members of these groups have been found to resemble each other in their chemical properties. Here we have a saving, an economy of thought, which answers to the labor saving of machines. For, after all, thought is a kind of work.

But this is not the highest conception of science. Amid the enthusiasm of discovery the scientific observer is rarely aware of the uses to which his discoveries may be put. The emerging of new aspects of things from their secret recesses smites the mind with awe, and the work of discovery is more than its own reward. The springs of feeling are touched sometimes, almost as in the case of the mystic when he feels himself to be absorbed in the object of his worship. "Men of science seek in all reverence to discover the almighty, the everlasting. They claim sympathy and friendship with those who, like themselves, have turned away from the more material struggles of human life, and have set their

hearts and minds on the knowledge of the eternal." These are the words of the president of the British Association for the Advancement of Science, 1906.

There is a likeness, therefore, between the religious prophet and the scientific discoverer. Both classes of men declare a vision of truth, moral or natural; both have borne witness to the truth; both have suffered for it. And if the scientific discoverer—whether in the ancient world, an Archimedes or a Hero, or in the modern world, a Newton or a Metchnikoff—has needed for his work the instruments which only money can provide, we must not dwell upon this circumstance as if it in any way placed them below the abstract thinker or the seer. "He that increaseth knowledge, increaseth sorrow." Even with every help of apparatus and opportunity, science is found a hard taskmistress. Darwin, Huxley, Tyndall—to quote prominent names and omitting innumerable less known but not less great instances—pursued their vocation at the risk, and to the loss, of bodily health.

How then does science operating through many minds act as a revealer? On the one hand it shows the oneness of experience in the order of time or successive occurrence; on the other hand, in the order of space or of simultaneous occurrence. And when this unity of experience is viewed *dynamically*, instead of as a mere fixed unity, we find ourselves in the presence of one immanent and controlling power.

And first, as to the order of time. The aim of science is to break up the complex fact into the aspects or relations which constitute it. One way of doing this is to resolve a given fact into the processes out of which it has arisen. This is the method of evolution.

The importance of the evolutionary method for us at present is that it introduces a *dynamical* conception of the world in place of a *statical* one; in other words, it deals with a changing equilibrium of forces, instead of a uniform equilibrium. Instead of a world created once

for all by a single fiat, it treats of things as though each fresh moment they formed a new system.

First the starry worlds have been regarded as produced from nebulae by condensation. Then living creatures—both animals and plants—have ceased to be regarded as fixed species; they are now looked upon as stages in a development from more primitive forms of life. Now we are being taught that the very elements are passing phases rather than ultimate realities. Helium is no longer an independent element, but is produced from radium. And radium itself is formed probably by a transformation of uranium. Hence when the universe is analyzed into chemical elements it continues to show the development of the manifold from the simple.

Where are we to take our stand upon firm ground in a universe which is thus always changing? There can be but one answer. We must seek the *form* of this perpetual process. And this form, if we could but find it, must be such that each stage in the development of the world is real in so far as it is bound up with this ultimate form or scheme of things. Hence so far as the different branches of science express the stages of development in terms successively more simple and more illuminating, they bring us nearer to the power, the thought, which, to use a metaphor, looms behind the process of the world.

Yet such approaches to the ultimate solution of the riddle of the world are always imperfect. It is sometimes thought that physics, for example, deals with realities when it speaks of molecules, of forces, of ether, in certain ways. It is improbable that the behavior of the elements of nature is entirely, or even accurately, represented by these phrases.

Let us now consider what is meant by simultaneous occurrence as opposed to the succession of processes with which the method of evolution deals. Simultaneous occurrence is usually, but not always, occurrence in space. For example, toothache is simultaneous with certain

nervous processes. But it is not certain that toothache is in space.

Noting this, by the way, we may say that in space nothing happens by itself. The movements of your hand as you turn these pages, change to a minute extent the center of gravity of the earth, and thereby of the solar system. The connection of events is almost as close in other respects—in electricity, for example. Hence we must not think about the course of the world's history as though it were made up of parallel isolated processes. Only in thought is it possible to isolate particular series of events, and to say that the earlier cause the later. For example, it is not correct to say that the weather makes the crops good or bad. You would leave out the soil, the use of suitable manures, the removal of weeds and fifty other circumstances. It is convenient, however, to consider the effects of the weather alone by supposing all the other circumstances to remain the same. But this is a pure supposition, and answers very imperfectly to the facts. It is more universally true to say that all things change together. Nothing exists or lives absolutely for itself. To return to our instance of a moment since, when you turn over these pages, you do not perceptibly alter the center of gravity of the world or even of the neighborhood in which you are. But if your neighbor was conducting delicate experiments with a pendulum, he would prefer that even such slight movements did not take place.

To resume: We have seen that the history of the world only has meaning so far as it is referred to a continuous scheme. And we have just found that the whole present texture of things is closely woven together. The two aspects of the world, the temporal and the spatial, are expressions of a single principle. Since this single principle finds thus much expression, it cannot be said to remain unknown, still less to be unknowable. In the presence of a power thus eternal and comprehensive, man falls naturally into the attitude of worship. Al-

though this worship does not always take the traditional forms of religion, the enthusiasm which fires the discoverer and the experimenter is none the less of a religious character. The eclipse of science at the end of classical antiquity was strangely foretold in the familiar story that we owe to Plutarch: how that a merchant vessel was driven out of its course at the end of the Gulf of Corinth, and that the passengers who were on board heard a voice from the shore bidding them carry the news that the great Pan was dead. Pan personified to the Greeks the beauties and terrors of nature. In the spirit of this story it might be said that Pan is now alive again. Or to pass from ancient symbols, we might say that the divine principle in nature is now recognized, as never before.

As the Greek worshiper of Pan, along the heights and valleys of Arcadia, felt himself sometimes to be seized by the strange powers of nature, so the world, as interpreted by natural science, seems to absorb into itself the man who observes. Wordsworth, in "The Recluse," bridges over the interval which separates at first sight the poetic from the scientific apprehension of the world:

"My voice proclaims
How exquisitely the individual mind
(And the progressive powers perhaps no less
Of the whole species) to the external world
Is fitted: and how exquisitely too
The external world is fitted to the mind,
And the creation (by no lower name
Can it be called) which they with blended might
Accomplish."

The somewhat prosaic ideas of Wordsworth are stamped with a more striking turn by Byron:

"I live not in myself, but I become
Portion of that around me; and to me
High mountains are a feeling."

Here we get the explanation of a peculiar quality of Darwin's mind. Much has been made of Darwin's con-

fessed lack of taste for poetry, as though his scientific pursuits had dwarfed his nature. His candor has been misunderstood. There is no general and widespread taste for poetry and the drama in England, and Darwin was almost certainly far above the average in this respect. But he seems to have found the deepest satisfaction in the presence of nature. And generally speaking, it is largely a matter of temperament whether the "admiration, hope and love" by which men thus live in the presence of nature find expression in devotional exercises or diffuse themselves through the whole waking life. Tyndall, when he ascended the Finsteraarhorn in 1858, was so profoundly stirred that for the moment the scientific observer was overwhelmed with religious feeling. "There was something saintly in the scene. . . . The radiance seemed to infuse a principle of life and activity into the mountains and glaciers, but still that holy light shone forth and those motionless clouds floated beyond, reminding one of that eastern religion whose essence is the repression of all action and the substitution for it of immortal calm."

We might go on gathering instances of such experiences—note the word—but that would not be enough. We need to seize upon the facts which are common to all of them. Why should the barriers between man and nature seem to disappear? These barriers arise for many practical reasons. The mechanical devices which enable man to control nature also separate him from nature. Let us try to put ourselves at the primitive, the natural position, which we have found to be resumed by the poets. The philosophy of Avenarius and of Mach is largely an attempt to give expression to this primitive aspect of experience. Mach, whose philosophy is exercising a great though little-noticed influence in England, has recently published a work, *Erkenntniss und Irrthum* ("Knowledge and Error"), from which I will take a short statement. "Let us consider the elements red, green, warm, cold and so on, however they may be named. These ele-

ments so far as they depend upon external conditions are *physical*; so far as they depend upon internal conditions are *mental*. Yet in both cases these elements are given to us directly, and are identical. Thus the question about appearance and reality loses its meaning in this simple condition of affairs. We have before us, at one and the same time, the elements of the real world and of the self." "I live not in myself, but I become portion of that around me," says Byron. How nearly allied are these two utterances!

They are allied because they express allied states of mind. Unfortunately scientific apprehension is caricatured in the popular idea of science, which regards it as an accumulation of facts more or less useful. "The loftiest aim of all the sciences," says Comte, "is not to minister to the arts of life, but to satisfy the fundamental necessity of the intellect to know the laws of phenomena." The true scientific apprehension, in so far as it is sustained by feeling, is akin to poetic apprehension. Thus enriched it rises to the height of philosophy. For example, speculations like those of Mach belong to the borderland between natural science and philosophy.

In fact there seems to be returning that worship of nature which can now be traced in the light of research, even in the religion of Israel; a worship enlarged by the advance of science and purified by the spirit of Jesus. Such a worship is the complement of the Christian faith, and guards it from the heresy of Manichæanism. There is an old interpretation of the first verse of Genesis by which "in the beginning" is understood of the first principles of things. "In their first principles heaven and earth are made of God." Nor are there lacking prophets of this worship. If anyone wishes to burst the ties of mere convention and enter into this spirit, let him turn to Walt Whitman's "Specimen Days in America." Perhaps God is more truly worshiped at times in this way than by glib conversations with Him, when the lamp of life burns low and His face is but dimly seen. The serv-

ants of the Temple are found in the porches, as well as in the Holy of Holies.

But we may not rest here. Nature as the poets and thinkers understand her, in the woods, by the rivers, on the mountains, over the sea, cannot be separated from human life. Poetry and scientific tradition are themselves the fruit of social life.

And yet the civilization which brings to us natural science and the poetry of nature, brings also the defilement of natural beauty. Greed writes itself across the landscape in the advertisements which haunt the railway lines. Uncleanly habits, as of an animal taken from its proper environment, turn the streets of English cities into slums. Man is at once greater and less than his kindred creatures. And the poet is left

“Brooding above the fierce confederate storm
Of sorrow barricaded evermore
Within the walls of cities.”

The mystery of man's nature is itself the subject of a science—psychology. Psychology deals with events so far as they are referred to the individual who experiences them. And so it can stay for a moment and dwell upon the pleasure and the pain, the attainment and the failure, which are the private and personal aspects of visible history. The meteorologist calmly notes the passing storm. The psychologist will devote himself, perhaps, to observing and recording the grief and disappointment of the countrymen whose crops are destroyed. But psychology is something more than a mere collection of arbitrary definitions and casual remarks. Other people beside the professed psychologist can comment upon the feelings of the English farmer. Psychology is now passing among the experimental studies, and this is one of the most striking features in the progress of contemporary science.

In determining and measuring the qualities and amounts of sensation under given conditions, the experimental

psychologist will probably modify the concepts which depend upon sensation. For, in the last resort, the fundamental concepts of physics and chemistry rest upon simple relations which can be immediately apprehended by the senses. This has been shown by Mach for the principle of the lever, and doubtless holds good also in other cases. "The human mind," says Ostwald, "handles abstract truths much less easily by themselves than with the help of an illustrative image."

But psychology does not give us the ultimate and complete expression of truth, any more than physics or chemistry. The terms and theories of psychology deal with but one aspect of experience, and have for their object to make that more comprehensible. But they cannot take the place of experience itself. Everyone who begins the study of psychology passes for a time under this illusion, and thinks that his descriptions reveal the hidden meaning of things. But all the familiar and even impressive terms, such as purpose, consciousness, attention, will—all these are imperfect and often transitory. Where now is the once magical term, *apperception*? Yet it would be a mistake to overlook the contributions to thought which have been made by systems now obsolete. Each method of interpreting experience so far as it has reached harmony with other methods must have embodied some permanent results. The psychologist can look back upon his predecessors, as the astronomer looks back from the system of Copernicus to the epicycles of Ptolemaic astronomy or the vortices of Descartes.

Now the interest of psychological controversies is so intimate that it is sometimes difficult to say whether they have lost their meaning or not. And so it may happen that dying systems may be galvanized into something like life. There is a land of shadows in which these phantoms move, the home of inarticulate thoughts and formless yearnings. Experimental psychology promises to shed light upon this region and to dispel its mists; not at once, perhaps, but in the end. For example, in many

spiritualist meetings which are professedly devoted to observation of fact, there is an appeal to the feelings which is calculated to render impossible scientific observation. It is enough to compare observations taken under these conditions with observations taken in a psychological laboratory, in order to understand why the methods of spiritualists cannot lead to verified results.

In like manner "Christian Science" avowedly appeals to the feelings, and so far as the feelings accompany or control physiological states, to that extent "Christian Science" may and doubtless does produce tangible effects. But this method of appealing to the feelings is not at all that of science, whether "Christian" or otherwise. In denying the existence of those diseases which are due to parasites or to minute organisms, "Christian Science" reveals its own lack of any scientific character. For the human body and the bodies of other living creatures, with the diseases and pains attending them, are part of one experience. To deny part of this experience, is to deny the whole.

We cannot attempt to consider at length what is meant by the immortality of the soul. Something, however, must be said now about the permanence and independence of the soul so far as these are involved in the theory of experience which we have been considering.

The popular idea of the soul regards it as self-existing and everlasting. This is not necessarily the religious idea of the soul. The Christian conception subordinates everything to the will of God. And even if that will could be fully known, we are not in a position to say beforehand that it is anticipated by popular ideas.

There are certain facts, however, which may serve as clues to these problems. The soul does not seem to be self-existent. For in order to show that the soul is self-existent, we must certainly be able to show that it exists without interruption. Now sleep is not less a difficulty than is death itself to those who maintain the continuous existence of the soul. For it may fairly be advanced that

there is a break of the soul's existence in dreamless sleep. Whether then we consider sleep or death, we find that the soul is not independent of other things. That is to say, the human personality is closely related with other things. Hence it is not a break in the unity of the world. And this is important for the system of thought through which the unity of the world is expressed.

Secondly, the soul is an imperfect unity. It is not one in the sense in which God may be said to be one. For it may be assumed that perfect harmony can only be reached in some wider system than that of which we are immediately aware; perhaps perfect unity demands nothing short of the whole universe. The human soul, however, bears many marks of discord. There are few persons, if any, whose purposes are entirely harmonious among themselves. Perfect oneness of purpose, of which formalist psychology knows so much, is an ideal to be looked for on a distant horizon. For clashing impulses seem to be characteristic of human experience as we know it. The curious instances of multiple personality—which should rather be called divided personality—are but extreme cases of what may be found in the average experience.

Where then is the dependence and imperfection of the soul to be remedied? When this need is merely contemplated, it seems to be satisfied in the ideal of God. When, however, this need is felt and acted upon, the religious experience begins.

Thus through the very consciousness of imperfection man gains an ideal which rises above and beyond experience. If man is dissatisfied with experience, dissatisfied with himself, he becomes aware of limits beyond which he would pass. And in so doing he reaches after a standpoint which is further on than that of science. In the passionless system of science, the beast of prey, the parasite, the germs of disease, are not condemned; they are described. Nor, on the other hand, is praise given to what we judge as noble: the apparent forethought and

self-sacrifice which occur not infrequently in the animal world.

Just as science consists of perceptions organized into a system, so we may imagine these human ideals organized into a system. Such a system would present itself as some all-embracing purpose in which every impulse would find its proper place.

We can trace another parallel between science and morals. Just as science itself depends upon, and is sustained by, an ideal of knowledge which could only be realized through a perfect reason, so morals depend in turn upon this ideal of a perfect will, which if it is expressed at all, must be expressed through some all-embracing purpose.

Thus man may rise sometimes even above nature, even above that beautiful order of things into which the poet is rapt with ecstasy. For man, in so far as he becomes the judge of nature, rises above it. And since the spirit judges all things and is judged of none, to that extent it is free from the bondage of sin and death. The universe may fall upon man and crush him, but he is greater than an unconscious universe. It is only to a mind capable of approval and disapproval that the universe seems to groan and travail toward some high purpose.

Here we light upon the problem of evil. Evil is that which conflicts with such a purpose. And so far as the conflict is real, so far is evil real. Again, in so far as human beings share in this conflict and are conscious of it, they are separated from the rest of the world, which may contain elements of evil but unconsciously. And the word "sin" will denote evil consciously pursued.

Side by side with the problem of evil is the problem of ugliness. The problem of evil is more urgent, but it is not more real than the other. However, it has received less attention. Just as the system of science takes no account of moral good and evil, so it has no place for the notions of the beautiful and the ugly.

Perhaps the "beautiful" has arisen in the crafts

through the contrast between purpose and execution. Hence there is a likeness between the beautiful and the good. For, as we have seen, the notion of the good seems to arise through the contrast between a need and its satisfaction. Hence the beautiful would be a kind of good. Where purposes are clearly attained without superfluous elements, where there is nothing discordant, the material in which those purposes are attained seems to gain the quality of beauty. On the other hand, the ugly seems to be found in a given material where the purpose of it is only partially attained. Few things are more beautiful than a machine in which, by gradual improvement, the superfluous has been refined away, and the required ends are attained by the most economical arrangement of the means. Hence workshops, machinery, factories, workmen's dwellings, are not always or necessarily ugly; but they are usually ugly in so far as they realize their purposes with a large amount of waste, or with an unsuitable handling of their materials. They are not the nearest way round to the proper conduct of human life. For they fail to embody the principle of "economy" in its concrete application. "Economy"—the direction of means to ends—is offended by too little no less than by too much. The complexity of modern life is such that its manifold purposes are not easily realized. For example, there is no satisfactory provision for leisure. The average of ugliness beyond which the modern city rarely advances is due to the fact that this aspect of things has not yet been systematically dealt with.

In considering these two problems of the evil and of the ugly, we have gone beyond the purely scientific view of experience. We have applied, in addition to the *judgment of fact*, the *judgments of value* both moral and æsthetic.

But we cannot leave such different methods merely side by side; we must seek to grasp them together in a single method. There must be some way of returning

to the real experience from the special standpoint of the different sciences. They split up experience into parts, with which they are severally occupied. We need to reverse this process; to fuse again into one these various elements. "We hold the parts in our hand; only the spiritual bond is lacking."

Philosophy has this professed office, namely, to point out and to reconcile, where it is possible, any contradictions in the leading ideas of the different sciences, and so make possible a complete harmony. But what philosophy seeks to do of set purpose is done incidentally and roughly by poetry.

The poets dog the heels of scientific discoverers when they appear. We can trace side by side the building of the majestic structure of science, and the outlines of "that great poem which all poets, like the coöperating thoughts of one great mind, have built up since the beginning of the world." "An intelligent reader," says Palgrave, "will find the influence of Newton as markedly in the poems of Pope as of Elizabeth in the plays of Shakespeare." According to the estimate which we form of poetry and the poetic vocation, shall we be willing or not to find there an authority only second to that of religion. It may be convenient, however, to distinguish between the dream of the poet and the vision of the prophet. The ultimate harmony of which the poet dreams is seen by the prophet, and apprehended through faith by the common man.

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